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Sea Grant Research

**Executive Summary of a Report of the National Sea
Grant Advisory Board**

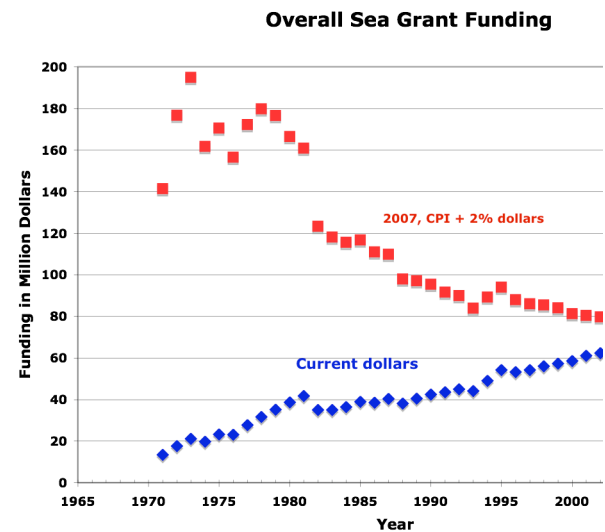
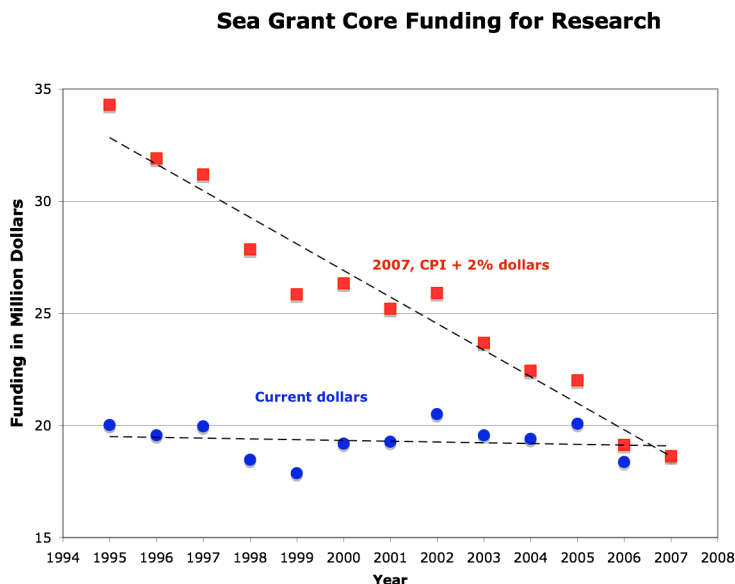
Committee to Review Sea Grant Research

August, 2009

Executive Summary

The National Sea Grant Advisory Board (NSGAB) was asked by the Director of the National Sea Grant College Program to address several issues of concern relative to research within the Sea Grant program. The primary concerns were related to a) the perception that the fraction of funds devoted to research within the overall program had been decreasing over the past decade, b) the impacts of such a change, and c) what could be done about this in the future. The Committee to Review Sea Grant Research was formed to address these issues and a more detailed charge that was given to the committee. This document is the report of that committee.

The combined research/outreach/education alliance of the National Sea Grant Program, executed by the state programs, is well recognized among the many programs in NOAA. The National Program has evolved from a federation of programs that addressed the overall NOAA Program mission, but with a focus on state needs, into the current model with a National Strategic Plan that has specific foci adhered to by the state programs. While it is too soon to evaluate the effectiveness of the new process, it is obvious that the research component of the Sea Grant Program faces major funding challenges. Funding of Sea Grant and its research has stagnated over roughly the last decade. However, the buying power for research funding (2007, CPI + 2% dollars) has declined by almost 50%, as shown below, whereas the buying power for Sea Grant's administration, education and outreach has declined by a smaller percentage. This leaves the research component of Sea Grant in an increasingly diminished position, unable to provide the new information required to respond to NOAA's national needs or to local outreach needs. Nevertheless, NOAA has not pushed for increased funding of Sea Grant as a whole among the other NOAA programs, and thus the decline in overall Sea Grant Program buying power has also decreased significantly since its inception, as also shown below.



This all leads to a fundamental perception of how Sea Grant and its portfolio serve the NOAA mission of service to America's coastal communities. Through a series of questionnaires to Sea Grant directors and NOAA laboratory directors as well as a number of interviews with Congressional, OMB, DOC, and NOAA staff and other interested individuals, insights were gained about both the effectiveness of Sea Grant and its research program and the overall funding

problems that Sea Grant has had in recent years. Many findings and recommendations are outlined in this committee report, but the overall analysis clearly points to a need for a greatly improved appreciation of Sea Grant at the national level and a much greater integrated focus on critical national needs in the coastal environment. The status quo has not engendered this appreciation or this focus.

From our interviews and questionnaires the committee believes that the primary reasons for the current overall funding and research funding problems in Sea Grant can be summarized largely as follows:

- ❖ Sea Grant is not seen as a national program with national goals, but as many small projects with little coherence.
- ❖ Sea Grant research is not seen as being responsive in addressing emerging issues.
- ❖ Sea Grant is not viewed as addressing the research interests that OMB sees as nationally important.
- ❖ Some perceive Sea Grant research to be of lesser quality compared to top quality NSF research.
- ❖ Sea Grant research is not seen as applicable to NOAA's mission.
- ❖ There are various NOAA coastal programs with overlapping missions that are very successfully competing with Sea Grant for funding.

Research must continue to have a major role in Sea Grant. However, we believe that Sea Grant must integrate toward having a truly national research program. This must involve a vigorous effort to market Sea Grant's research efforts and demonstrate that they impact national issues in important, indeed fundamental ways. But more than that, there must be a clear focus of Sea Grant's research effort on a few critical issues of national importance and concern in the coastal environment.

In considering these overall funding problems of Sea Grant, the way in which Sea Grant has operated over the past several decades, and the impressions that we have gained from responses to our questionnaires and to our interviews, the committee believes that it is worthwhile to consider possible new models for Sea Grant and its research. Several different models are explored in this report, with advantages and disadvantages indicated for each. However, the committee believed that it was not constituted nor charged to finalize this type of necessary analysis or to make recommendations as to just what path should be taken. A carefully and appropriately constituted task team will need to be formed to develop a fully informed assessment of this kind.

- **Recommendation:** The NSGO, the NSGAB, the SGA, and NOAA should form a Task Team to initiate detailed discussions on the approaches to developing a stronger national focus for Sea Grant such that its success, and therefore increased research and overall funding, can be achieved. Considerations should include, among other actions, efforts to align with NOAA's regionalization of its programs, increased emphasis on critical coastal research needs that serve the nation while preserving some level of research that serves local needs, and a consideration of ways to improve the mechanism for handling the research portfolio.

Our preliminary analysis suggests that, whichever model is chosen, it should in the end result in the following:

- ❖ Sea Grant will be perceived as a national program with national goals addressing a small number of clearly defined national needs that are determined jointly by the programs and NOAA, and possibly OMB and Congress.
- ❖ Sea Grant will be recognized for its high quality research that makes major impacts.
- ❖ Sea Grant research will be effective in addressing new and emerging issues.
- ❖ The research needs of the individual state programs will still be met.
- ❖ State programs will continue to receive funding for outreach and education programs.
- ❖ NOAA will become an active and effective champion for Sea Grant.
- ❖ Sea Grant research will be clearly applicable to NOAA's mission, with increased interaction with other NOAA programs whose overall missions are different from that of Sea Grant.
- ❖ Overall administrative costs and reporting requirements will be minimized.

The committee also addressed issues that could enhance Sea Grant's research efforts, including the future value of Sea Grant research, how it should be evaluated, and ways in which an individual program's research portfolio can be expanded. For example, linking Sea Grant to NOAA initiatives and promoting the idea that Sea Grant could serve as a vehicle for NOAA offices for managing and recruiting their extramural funding portfolio should have a high priority. However, considerable concern was evident that Sea Grant and the rest of NOAA have not worked well together in the past. NOAA has not been seen as an effective champion for Sea Grant. The Sea Grant directors believe that real collaboration will never be possible until the rest of NOAA accepts the need for stakeholder engagement in the research process. At the same time Sea Grant is part of a mission-based agency with a mandate beyond pure science for its own sake. Furthermore, for the collaboration to become meaningful, all must recognize that Sea Grant is a true partnership, not wholly owned by NOAA or by universities.

- **Recommendation:** NOAA must find ways to better utilize the strengths of Sea Grant, such as engaging and implementing the user/clientele-oriented research, joint funding on certain cross-cutting initiatives, sharing facilities, and looking for niches to utilize Sea Grant strengths.

- **Recommendation:** Sea Grant needs to develop more meaningful partnerships with the NOAA laboratories and increase and improve efforts to communicate the impacts and value of Sea Grant research to the rest of NOAA. Forging partnerships would allow Sea Grant programs to be the vehicle for managing extramural research projects that are selected on a peer-reviewed competitive basis and would enhance research opportunities. Science workshops among Sea Grant and the NOAA laboratories should also be held to discuss ongoing and future research findings and collaboration.

- **Recommendation:** NSGO must be more aggressive in:
 - a) promoting the contributions of Sea Grant to all levels of NOAA. One way to do this is to engage a larger number of NOAA's managers and scientists in the proposal review process for research and extension; and
 - b) demonstrating that America's universities are an unequalled science, technology and human resource that, through Sea Grant, can be applied to NOAA's mission.

The interviews raised another issue that contributes to the funding difficulties of Sea Grant. This is the number of coastal programs within NOAA. The reasons cited for these new programs are numerous. The reasons notwithstanding, the results are obvious. There are too many programs with unclear mission statements, some redundancy in purpose, all subject to continuing expansion of their missions, and competing for a relatively small amount of money. The competition for funding diminishes the capability of each in addressing national and local needs. As presently structured, these programs risk competing with others to the point that the overall good and the ability of meeting national objectives of each is diminished.

Strengthening regional partnerships and approaches to collaborative research should be encouraged and could lead to significant new funding and results. Regional partnerships can address issues that are larger and more complex than those in a single state, and national issues can often be more easily approached on a regional scale. Regional partnerships can provide excellent opportunities for involvement with other NOAA entities as well as various federal and state agencies, and this would follow NOAA's intent for regionalization in its overall programs.

- **Recommendation:** Regional partnerships among Sea Grant programs and other entities are an appropriate approach for producing significant new results that address important regional and national issues. Increased partnerships within a state with governmental and private sources are also strongly encouraged.

Aligning research programs with areas whose importance is clearly going to grow in the future is a sensible approach. Examples include climate-related research, marine transportation issues, alternative energy sources in the marine environment, and human dimensions research.

- **Recommendation:** Research programs should be aligned to address critical issues that will arise in the future.

The committee believes that research remains the foundation of the Sea Grant program upon which the outreach and education programs exist. This is true both at the national level and at the level of state programs. A percentage goal for the amount of research relative to other components of a Sea Grant program has been generally accepted as a mechanism to level the efforts of the diverse programs. Historically it has been ~50%. However, the ability to reach 50% has been hampered recently by the shrinking value of the dollars received by individual

programs and extension program mandates from the NSGO. States with a smaller overall budget often find it very difficult to reach the 50% level, and this “recommended” percentage hampers their flexibility to develop all parts of a program. Ideally a program should develop a research effort that makes the most impact relative to the national goals of Sea Grant as well as important issues to the state and its stakeholders.

- **Recommendation:** The percentage of a particular program’s funding devoted to research should be flexible, although a target of 50% is appropriate for most programs. However, the particular goals of an individual program must be considered. Given this flexibility, there must be realistic, tractable and understandable metrics for research performance.

- **Recommendation:** Because some programs are too small to be able to designate a significant fraction of their funding to research, consideration should be given to combining the research activities of these smaller programs with neighboring or related programs so that all state programs can realize the research benefit.

Traditionally the most common metrics that have been utilized for assessing research performance in Sea Grant are peer-reviewed publications, patents, presentations, degrees granted, type and quality of placement of students supported, etc. Nevertheless, the committee believes that the assessment of the impacts of Sea Grant research in the future is of more importance in evaluating the contribution of a program to a national effort. For example, the incubation of new industries and start-up businesses as a result of Sea Grant research and the contribution of Sea Grant research to the sustainable development of coastal and marine resources, addressing socio-economic issues affecting productivity or the health of coastal ecosystems, and the impact on policy and lawmaking are all important measures of impact. Another important metric of the value of Sea Grant research is comprised of the human resources who are trained in research projects and who work in NOAA and universities in support of NOAA’s mission, and with other national and local environmental and resource management agencies.

- **Recommendation:** Assessing the impact of Sea Grant research, e.g., contributions to sustainability, improving regulatory policies, changing behavior, creating industries, etc. should have a high priority in future evaluation of Sea Grant research. In addition, the human resources, together with all publications and other research products deriving from funds administered by the Sea Grant Program, regardless of whether or not some of the funding came from sources other than Sea Grant core funding, should be considered in this evaluation. The contribution of core Sea Grant funding relative to other sources should also be monitored and reported.

As part of the overall evaluation process, a significant effort has been undertaken recently by the SGA to encourage programs to send in their peer-reviewed publications to the Sea Grant Library. This study has shown that there appears to be no decline in such publications despite a decline in buying power of core Sea Grant funded research, at least up through the 2004 funding year. It is not clear how these data should be interpreted. One possibility is that the lack of a decline in output reflects the success of the programs in leveraging their core Sea Grant research funding with other federal, state, and private resources. These data should continue to be updated. This effort will also provide accurate information to outside interests about the productivity, value and extent of Sea Grant research.

- **Recommendation:** Individual Sea Grant Programs should continue to submit peer-reviewed publications to the Sea Grant Library so that an up-to-date record of these publications is constantly available. Some mechanism should be devised to evaluate the relative contribution of Sea Grant vs. other funds obtained by state programs to the overall productivity of Sea Grant researchers.

Many Sea Grant programs believe that their administrative burdens have been increased by more research reporting from both the NSGO and their university.

- **Recommendation:** Every effort should be made to minimize and reduce duplicative and unnecessary reporting requirements.